

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Feiling Wang                                  Art Unit : 2877  
Serial No. : 10/567,185                                 Examiner : Layla Lauchman  
Filed : November 14, 2006  
Title : OPTICALLY MEASURING SUBSTANCES USING PROPAGATION MODES OF LIGHT

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

REQUEST FOR CORRECTED OFFICIAL FILING RECEIPT

Please correct the Filing Receipt for the above-referenced application to include the correct priority claim as follows:

**This application is a 371 of PCT/US2004/17649 06/04/2004**  
**which claims benefit of 10/860,094 06/03/2004, PAT 6,943,881**  
**and 60/561,588 04/12/2004**  
**and 60/526,935 12/04/2003**  
**and 60/514,768 10/27/2003**  
**and 60/475,673 06/04/2003**

Please supply a Corrected Filing Receipt to the undersigned with respect to this application. A copy of the original Filing Receipt showing the desired changes is attached for your convenience. Applicant also submits a copy of the Preliminary Amendment filed February 2, 2006 and the Declaration by the Inventor filed November 14, 2006. Both of these submissions contain the correct priority data.

Applicant : Feiling Wang  
Serial No. : 10/567,185  
Filed : November 14, 2006  
Page : 2 of 2

Attorney's Docket No.: 17370-0002US1

No fee is believed to be due. If, however, there are any charges or credits, please apply them to Deposit Account No. 06-1050.

Respectfully submitted,

Date: August 10, 2009

/Hwa C. Lee/  
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For Bing Ai, Reg. No. 43,312

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## UNITED STATES PATENT AND TRADEMARK OFFICE

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/567,185	11/14/2006	2877	365	17370-002US1	24	15	3

CONFIRMATION NO. 1185

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## FILING RECEIPT



\*OC00000022251610\*

Date Mailed: 02/01/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

## Applicant(s)

Feiling Wang, Medford, MA;

**Power of Attorney:** The patent practitioners associated with Customer Number 20985.

## Domestic Priority data as claimed by applicant

This application is a 371 of PCT/US04/17649 06/04/2004  
 which is a CON of 60/561,588 04/12/2004 claims benefit of 10/860,094 06/03/2004, PAT 6,943,881  
 and is a CIP of 60/475,673 06/04/2003  
 and is a CIP of 60/514,768 10/27/2003  
 and is a CIP of 60/526,935 12/04/2003  
 and is a CIP of 60/561,588 04/12/2004

## Foreign Applications

If Required, Foreign Filing License Granted: 01/30/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US10/567,185**

Projected Publication Date: 05/10/2007

Non-Publication Request: No

Early Publication Request: No

**\*\* SMALL ENTITY \*\***

**Title**

Optically measuring substances using propagation modes of light

**Preliminary Class**

356

## **PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

### **LICENSE FOR FOREIGN FILING UNDER**

#### **Title 35, United States Code, Section 184**

#### **Title 37, Code of Federal Regulations, 5.11 & 5.15**

### **GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted

under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

#### **NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

Date of Deposit

Amendments to the Specification:

1. Please replace the paragraph [0001] beginning at page 1, line 4 with the following amended paragraph:

[0001] This application claims the benefit of PCT Application No. US2004/17649 entitled "Measurements of Optical Inhomogeneity and other Properties in Substances Using Propagation Modes of Light" and filed June 4, 2004. [This] The above-referenced PCT application claims the benefits of the following four U.S. Provisional Applications:

1. Serial No. 60/475,673 entitled "Method and Apparatus for Acquiring Images of Optical Inhomogeneity in Substances" and filed June 4, 2003;

2. Serial No. 60/514,768 entitled "Coherence-Gated Optical Glucose Monitor" and filed October 27, 2003;

3. Serial No. 60/526,935 entitled "Method and Apparatus for Acquiring Images of Optical Inhomogeneity in Substances" and filed December 4, 2003; and

4. Serial 60/561,588 entitled "Acquiring Information of Optical Inhomogeneity and Other Properties in Substances" and filed April 12, 2004.

2. Please replace the paragraph [0002] beginning at page 1, line 17 with the following amended paragraph:

[0002] In addition, [this] the above-referenced PCT application claims the benefit of a prior a-pending U.S. Application No. 10/860,094 [ ] entitled "MEASUREMENTS OF OPTICAL INHOMOGENEITY AND OTHER PROPERTIES IN SUBSTANCES USING PROPAGATION MODES OF LIGHT" and filed on June 3, 2004, which was later published as U.S. Patent Publication No. US 2005-0018202

A1 on January 27, 2005 and issued as U.S. Patent No. 6,943,881 on September 13, 2005.

3. Please replace the paragraph [0003] beginning at page 1, line 21 with the following amended paragraph:

[0003] The entire disclosures of the above-referenced U.S. applications are incorporated herein by reference as part of this [PCT] application.

4. Please add the following new paragraph after paragraph [0003] beginning at page 1, line 21:

Furthermore, the entire disclosures of the following U.S. patent publications and patents are incorporated by reference as part of the specification of this application:

1. The above-referenced U.S. Patent Publication No. US 2005-0018202 A1;

2. The above-referenced U.S. Patent No. 6,943,881;

3. U.S. Patent Publication No. 2004-0246490 A1 entitled "Measurements of Substances Using Two Different Propagation Modes of Light Through a Common Optical Path" and published on December 9, 2004;

4. U.S. Patent No. 6,903,820 entitled "Measurements of Substances Using Two Different Propagation Modes of Light Through a Common Optical Path" and issued on June 7, 2005; and

5. PCT Publication No. 05/001522 dated January 6, 2005 for the above-referenced PCT Application US2004/17649.



5. Please amend the title of the application to read as follows:

~~MEASUREMENTS OF OPTICAL INHOMOGENEITY AND OTHER PROPERTIES~~  
~~IN OPTICALLY MEASURING SUBSTANCES USING PROPAGATION MODES OF~~  
~~LIGHT~~

Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1-24. (Canceled)

25. (Original) A device for optically measuring a sample, comprising:

a waveguide to receive and guide an input beam in a first propagation mode;

a probe head coupled to the waveguide to receive the input beam and to reflect a first portion of the input beam back to the waveguide in the first propagation mode and direct a second portion of the input beam to a sample, the probe head collecting reflection of the second portion from the sample and exporting to the waveguide the reflection as a reflected second portion in a second propagation mode different from the first propagation mode; and

a detection module to receive the reflected first portion and the reflected second portion in the waveguide and to extract information of the sample carried by the reflected second portion.

26. (Original) The device as in claim 25, further comprising:

an optical delay device in an optical path of the reflected first and second portions to produce a relative phase delay between the reflected first and second portions; and

an optical delay modulator in the optical path of the reflected first and second portions to modulate the relative phase.

27. (Original) The device as in claim 25, further comprising an optical delay modulator in an optical path of the reflected first and second portions to produce a relative phase delay between the reflected first and second portions and to modulate the relative phase.

28. (Original) The device as in claim 25, further comprising a variable optical delay unit in an optical path of the reflected first and second portions to produce a variable relative phase delay between the reflected first and second portions, wherein the variable optical delay unit comprises:

a mode splitting unit to separate the reflected first portion in the first propagation mode and the second portion in the second propagation mode into a first optical path and a second optical path, respectively; and

a variable optical delay element in one of the first and the second optical paths to adjust an optical path length.

29-112. (Canceled)

113. (Original) A device for optically measuring a sample, comprising:

a waveguide, which supports a first propagation mode and a second, different propagation mode, to receive and guide an input beam in both the first and the second propagation modes;

a probe head coupled to the waveguide to receive the input beam and to reflect a first portion of the input beam in the first propagation mode back to the waveguide in the first propagation mode and direct a second portion of the input beam in the second propagation mode to a sample, the probe head collecting reflection of the second portion from the sample and

exporting to the waveguide the reflection as a reflected second portion in the second propagation mode; and

a detection module to receive the reflected first portion and the reflected second portion in the waveguide and to extract information of the sample carried by the reflected second portion.

114. (Original) The device as in claim 113, further comprising:

an optical delay device in an optical path of the reflected first and second portions to produce a relative phase delay between the reflected first and second portions; and

an optical delay modulator in the optical path of the reflected first and second portions to modulate the relative phase.

115. (Original) The device as in claim 113, further comprising an optical delay modulator in an optical path of the reflected first and second portions to produce a relative phase delay between the reflected first and second portions and to modulate the relative phase.

116. (Original) The device as in claim 113, further comprising a variable optical delay unit in an optical path of the reflected first and second portions to produce a variable relative phase delay between the reflected first and second portions, wherein the variable optical delay unit comprises:

a mode splitting unit to separate the reflected first portion in the first propagation mode and the second portion in the second propagation mode into a first optical path and a second optical path, respectively; and

a variable optical delay element in one of the first and the second optical paths to adjust an optical path length.

117-154. (Canceled)

155. (Original) A device for optically measuring a sample, comprising:

- a waveguide, which supports at least an input propagation mode of light, to receive and guide an input beam in the input propagation mode;

- a probe head coupled to the waveguide to receive the input beam and to reflect a first portion of the input beam back to the waveguide in the input propagation mode and direct a second portion of the input beam in the input propagation mode to a sample, the probe head collecting reflection of the second portion from the sample and exporting to the waveguide the reflection as a reflected second portion in the input propagation mode; and

- a detection module to receive the reflected first portion and the reflected second portion in the input propagation mode from the waveguide and to extract information of the sample carried by the reflected second portion.

156. (Original) The device as in claim 155, wherein the detection module comprises:

- a beam splitter to split received light into a first beam and a second beam;

- a first optical path to receive the first beam;

- a second optical path to receive the second beam;

- a beam combiner optically coupled to the first and the second optical paths to combine the first and second beams and to split the combined beam into a first output beam in a first

propagation mode and a second output beam in a second propagation mode;

a first optical detector to receive the first output beam;  
and

a second detector to receive the second output beam.

157. (Original) The device as in claim 156, wherein the detection module comprises a variable optical delay element in the second optical path to adjust a relative delay between the first and the second beams at the beam combiner.

158. (Original) The device as in claim 156, wherein the beam combiner is a polarization beam splitter and the first and the second propagation modes are two orthogonal polarization modes.

159. (Original) The device as in claim 155, wherein the optical probe head comprises an optical partial reflector which reflects the first portion of the input beam back to the waveguide.

160. (Original) The device as in claim 155, further comprising a tunable optical filter in an optical path of light to tune the frequency of the first and second output beams to measure the sample with a spectral bandwidth of the filter.

161. (Original) The device as in claim 155, further comprising a positioning mechanism coupled to adjust a relative lateral position between the optical probe head and the sample to direct the second portion to reach different locations on the sample to obtain information of the sample at the different locations.

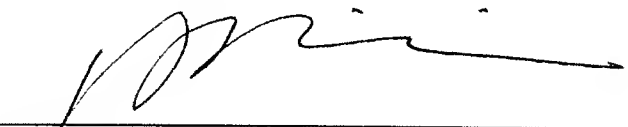
Remarks

Prior to examination of the present application, please enter the amendments to the specification and claims as indicated above. Claims 25-25, 113-116 and 155-161 remain pending and are to be examined. Accordingly, the claim fee for filing this application is computed based on the actually filed claims in this application: Claims 25-25, 113-116 and 155-161.

Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: Feb. 2, 2006

  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Feiling Wang  
Serial No. : 10/567,185  
Filed : February 2, 2006  
Title : OPTICALLY MEASURING SUBSTANCES USING PROPAGATION MODES OF LIGHT

Art Unit : Unknown  
Examiner : Unknown  
Conf. No. : 1185

Commissioner for Patent  
P.O. Box 1450  
Alexandria, VA 22313-1450

DECLARATION BY THE INVENTOR

As a below-named inventor(s), I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

OPTICALLY MEASURING SUBSTANCES USING PROPAGATION MODES

the specification of which:

- ☐ is attached hereto.
- ☒ was filed on February 2, 2006, and identified as Attorney Docket No. 17370-002US1.
- ☒ was filed on February 2, 2006, as Application Serial No. 10/567,185.
- ☒ was described and claimed in PCT International Application No.

PCT/US04/17649 filed on June 4, 2004.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.



Applicant : Feiling Wang  
 Serial No. : 10/567,185  
 Filed : February 2, 2006  
 Page : 2 of 3

Attorney's Docket No.: 17370-002US1

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 C.F.R. §1.56.

I hereby claim the benefit under Title 35, United States Code, §119(c)(1) of any United States provisional application(s) listed below:

<u>U.S. Serial No.</u>	<u>Filing Date</u>	<u>Status</u>
60/475,673	June 4, 2003	Expired
60/514,768	October 27, 2003	Expired
60/526,935	December 4, 2003	Expired
60/561,588	April 12, 2004	Expired

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information I know to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

<u>U.S. Serial No.</u>	<u>Filing Date</u>	<u>Status</u>
10/860,094	June 3, 2004	Issued

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

<u>Country</u>	<u>Application No.</u>	<u>Filing Date</u>	<u>Priority Claimed</u>
PCT	PCT/US2004/017649	June 4, 2004	[X] Yes [ ] No


I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are

Applicant : Feiling Wang  
Serial No. : 10/567,185  
Filed : February 2, 2006  
Page : 3 of 3

Attorney's Docket No.: 17370-002US1

punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of inventor: FEILING WANG

Inventor's signature: 

Date: 11/13/06

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